A NOTE ON THE MOUTHPARTS OF THE ARADIDAE

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The members of the heteropterous family Aradidæ are supposed to represent the extreme of dorso-ventral flattening. Certainly they are about as thin as we can imagine possible. We are apt to think that their anatomy, both internal and external, has been modified primarily in this direction. It was with considerable surprise, therefore, that the author, in the course of some morphological studies, discovered a modification of the mouthparts unparalleled, so far as known, in the other Hemiptera and which necessitates considerable dorso-ventral space.

This modification occurs in the mandibular and maxillary setæ and is confined to the interior of the head. The head capsule is somewhat modified to accommodate these changed conditions. It will be noticed (Fig. 1) that the clypeus and labrum, known to systematists as the tylus, is curved ventrad and then caudad in the arc of a circle. The suture separating the clypeus and labrum is obsolete, a difference in texture and flexibility marking its probable position. The lateral edges of these sclerites are incurved and extend a considerable distance within the head. These structures form a semicircular sheath.

The mandibular and maxillary setæ are articulated in the normal position and become firmly interlocked soon after their origin. They are then coiled, within the head, four or five times anti-clockwise, then they bend sharply and reverse their direction, coiling an equal number of times clockwise. They leave the head capsule at the usual place, just cephalad of the labium and lie in the groove along its dorsal aspect. These coils are closely appressed and the cephalic half of the coil is enclosed by the sheath formed by the clypeus and labrum.

The mechanics of this arrangement are simple. A pull on the proximal ends of the setæ would result in the uncoiling of the spring in both directions, forcing the distal end further out of the head capsule. Thus the distance which these setæ may be protruded is limited only by the length and contractability of the muscles concerned.

The total length of these setæ, in *Neuroctenus simplex* (Uhl), is approximately six millimeters. In this species they practically equal the total length of the insect. The extent that these may be protruded is not known. The same arrangement has been found in all species of the family which have been examined, some six species. It is also found in the nymphs.

The biology of these interesting insects is but imperfectly known. Of course, they are found exclusively under comparatively loose bark and supposedly feed upon the juices of

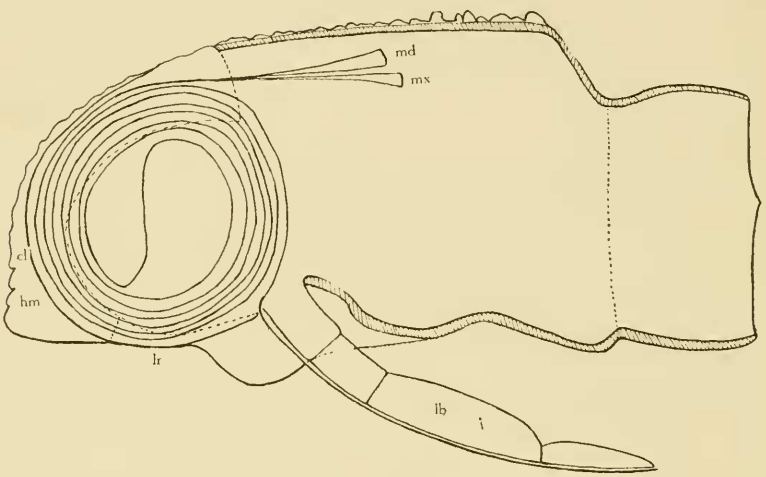

FIG. 1.

Longisection of head of Neuroctenus simplex (Uhl). (Diagramatic).
cl—Clypeus; *hm*—Hemimaxilla; *lb*—Labium; *lr*—Labrum;
md—Mandible; *mx*—Maxilla.

decaying wood and bark. Their methods of feeding are unknown, in fact, their very food supply is probably only inferred. We are therefore unable to state what purpose, if there be a special purpose, this modification serves.

It may be well to mention here the fact, as pointed out by Reuter,* that the labium consists of four segments instead of three, as given in most of the American texts and tables.

*Reuter, O. M., Neue Beitrage zut Phylogenie und Systematik der Miriden. Acta Soc. Sc. Fenn. T. 36, No. 3, 1910.